

THE AMERICAN DAGGER NEMATODE  
Xiphinema americanum Cobb, 1913

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The American dagger nematode is one of many species of the genus Xiphinema. The common name "dagger nematode" applies to all species of the genus. Xiphinema americanum was first described in 1913 by N. A. Cobb, who had recovered it from the roots of corn, grass and citrus found growing on both the "Atlantic and Pacific slopes of the United States (1)." Found in both agricultural and forest soils, X. americanum has been referred to as the most destructive plant parasitic nematode in America as well as one of the four major nematode pests in the southeastern United States, and is known to vector plant viruses (3,19,20). It has been reported that many nematodes identified as X. americanum from various parts of the world are probably a number of different closely related species. A discussion of the specific differences is not within the scope of this circular. Therefore, X. americanum as it appears in this publication refers to the entire group of closely related species identified as Xiphinema americanum (18).

DISTRIBUTION

Xiphinema americanum has a worldwide distribution. It has been found in Canada, the United States, Mexico, Central and South America, and in the Caribbean Islands; has also been recorded from Africa, Japan, India, parts of Europe, Australia, U.S.S.R., and Pakistan (16,17).

HOSTS

This nematode is pathogenic to a wide range of food crops, ornamentals, native plants, and shade trees. Some of the hosts of the American dagger nematode are: soybeans, corn, oats, wheat, sugarcane, strawberries, red and white clovers, grasses, citrus, cherry, apple, pear, mango, coffee, pine, cottonwood, ash, maple, sycamore, oak, and azalea (5,7,11,14,15,16,21).

SYMPTOMS AND PATHOLOGY

The pathogenicity of X. americanum was first demonstrated in 1955 on young shortleaved yellow pine trees (Pinus echinata Mill.). The young roots exhibited moderate swelling with clusters of short stubby branches. There were varying degrees of necrosis and shriveling of small roots at their points of attachment (5,16,22). It has also been associated with reduced growth of young seedlings and decline of jack pine (Pinus banksiana Lamb.). In laurel oaks (Quercus laurifolia Michx.) the roots are largely devoid of smaller rootlets except for occasional clusters of short stubby branches (3). In Guatemala, it has been known to puncture and destroy root cells of coffee trees, causing chlorosis, wilting, and complete defoliation (10,13,16). Infected roots of roses have elongate galls or swelling and curling near the tips (5,8).

Infected field crops are likely to show patches of stunted growth. The host plants will have almost no feeder or secondary roots. In strawberries, the nematodes feed at the root tips and along the sides of the roots. This devitalizes the tips and causes death over much of the root (4). At points where the nematodes feed, the roots develop reddish brown lesions which turn brown or black and result in reduced root systems and stunted tops (4,12,16). Turf and forage legumes infected by American dagger nematodes will develop patches of declining growth with chlorotic foliage and sparse roots (6).

In general, plants infected with X. americanum may exhibit poor growth with stunting or decline, display yellowing or wilting foliage, and have reduced root systems with occasional tufts of stubby rootlets (2,5).

This nematode belongs to one of three genera of plant parasitic nematodes known to transmit viruses to plants. Xiphinema americanum is a known vector of tobacco and tomato ring spot viruses (9,16,19).

#### SURVEY AND DETECTION

1) Examine the top parts of plants for stunting, yellowing, wilting, or general unthriftness. Examine the roots for absence of smaller secondary and feeder roots, for discoloration and necrosis. Examine root tips for abnormal swellings or galls.

2) If any of the above symptoms are observed, submit approximately one pint of combined soil and roots to a nematology laboratory while taking care to prevent the sample from overheating.

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